

CLAIMS

1. A discharge valve apparatus for a reciprocating compressor comprising:

a discharge cover having built-in volume so as to cover front end surface of a cylinder;

a discharge valve disposed so as to be (contacted/separated to/from) the front end surface of the cylinder by a piston which undergoes a reciprocating movement inside the cylinder; and *engage?*

a valve spring having both ends respectively adhered to rear surface of the discharge valve and *to rear* inner surface of the discharge cover which is facing the rear surface of the discharge cover so as to elastically supporting the rear surface of the discharge valve, *Ex. 81.*

wherein the valve spring is formed as a conical shape in which a rotation radius is gradually reduced or increased so as to prevent a part from impacting to other parts during compression. *relative* *? what.*

2. The apparatus of claim 1, wherein the valve spring is wound more than twice.

3. The apparatus of claim 1, wherein at least one stepped unit is formed inside the discharge cover, (and therefore a front end of the valve spring is not contacted to inner wall of the discharge cover, whereby abrasion generation is prevented. *Conclusion ... doesn't set forth how accomplished.* *Ex. 81.*

4. The apparatus of claim 3, wherein a stepped unit in which end
of the valve spring is inserted is formed successively to the stepped unit.

5. The apparatus of claim 1, wherein a certain gap is formed
between wires of the valve spring when the valve spring is projected on the
inner wall of the discharge cover.

6. The apparatus of claim 1, wherein a center of the valve spring
and a center of the discharge valve are on ^{the} same axial line.

7. The apparatus of claim 1, wherein a gap between an outer
diameter of the discharge valve and an inner diameter of the discharge cover
is more than 1mm.

8. The apparatus of claim 1, wherein the discharge valve
comprises:

a plane pressure face unit which is adhered to the front end surface
of the cylinder; and

a pressure back face unit which is formed protruded on a side facing
the pressure face unit so that its diameter is gradually reduced from edge
toward the center direction.

9. The apparatus of claim 8, wherein a parting line is formed on
a position where the pressure face meets the pressure back face.

10. The apparatus of claim 8, wherein the discharge valve further comprises an undercutting surface unit formed as biased to at least one of the pressure face and the pressure back face. 27

5 11. The apparatus of claim 8, wherein the pressure back face unit further comprises a spring insert unit so as to be forcedly inserted into the valve spring.

10 12. The apparatus of claim 11, wherein the spring insert unit includes a vertical portion and a horizontal portion. *ref. figure*

13. The apparatus of claim 1, wherein a gate is formed on fixed metal mold on which the pressure face unit is molded, when the discharge valve is fabricated by an injection molding method. *Method of manufacturing*

15 14. The apparatus of claim 1, wherein a plurality of eject pins are formed on a movable metal mold on which the pressure back face unit is formed, when the discharge valve is fabricated by an injection molding method. *μ*